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Customer No.: 00432

Fig. 1

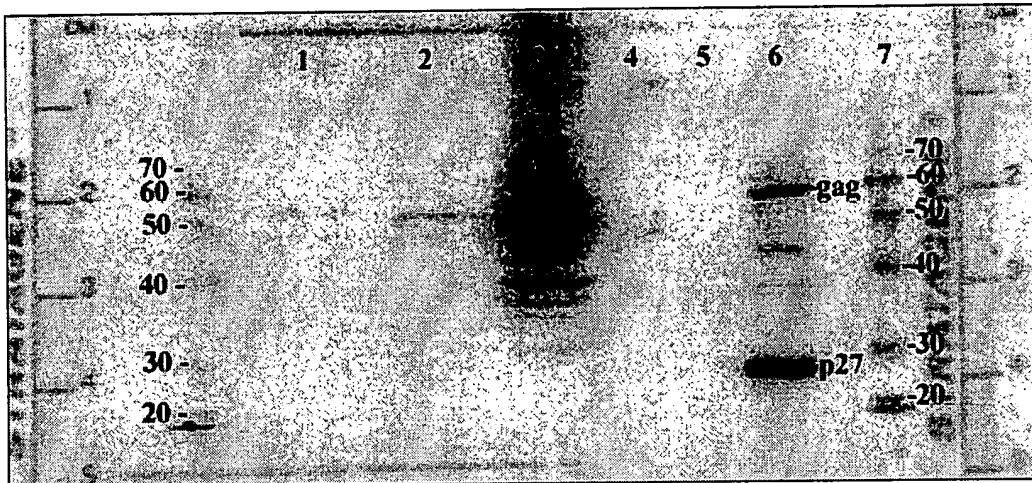
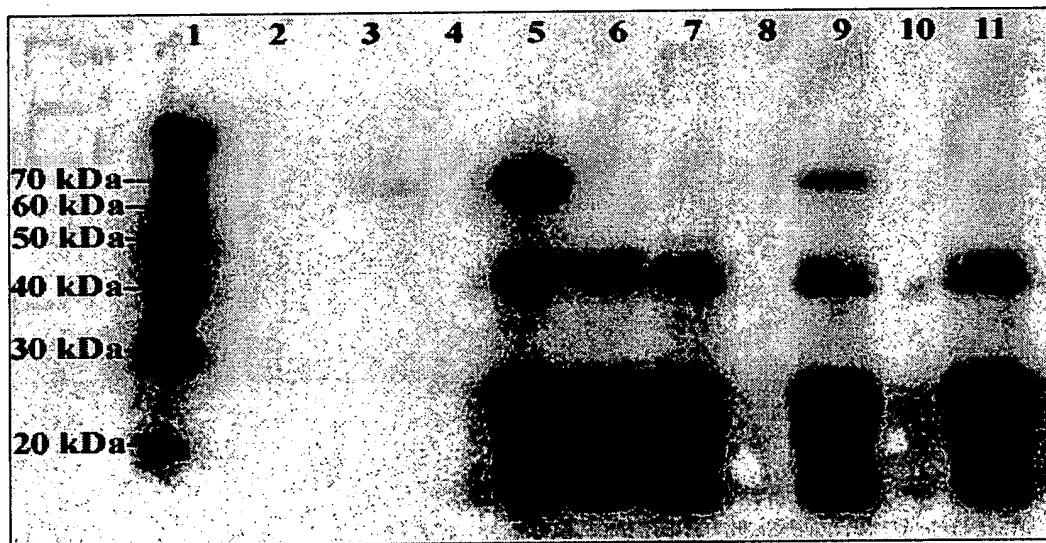


Fig. 2



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Fig. 3

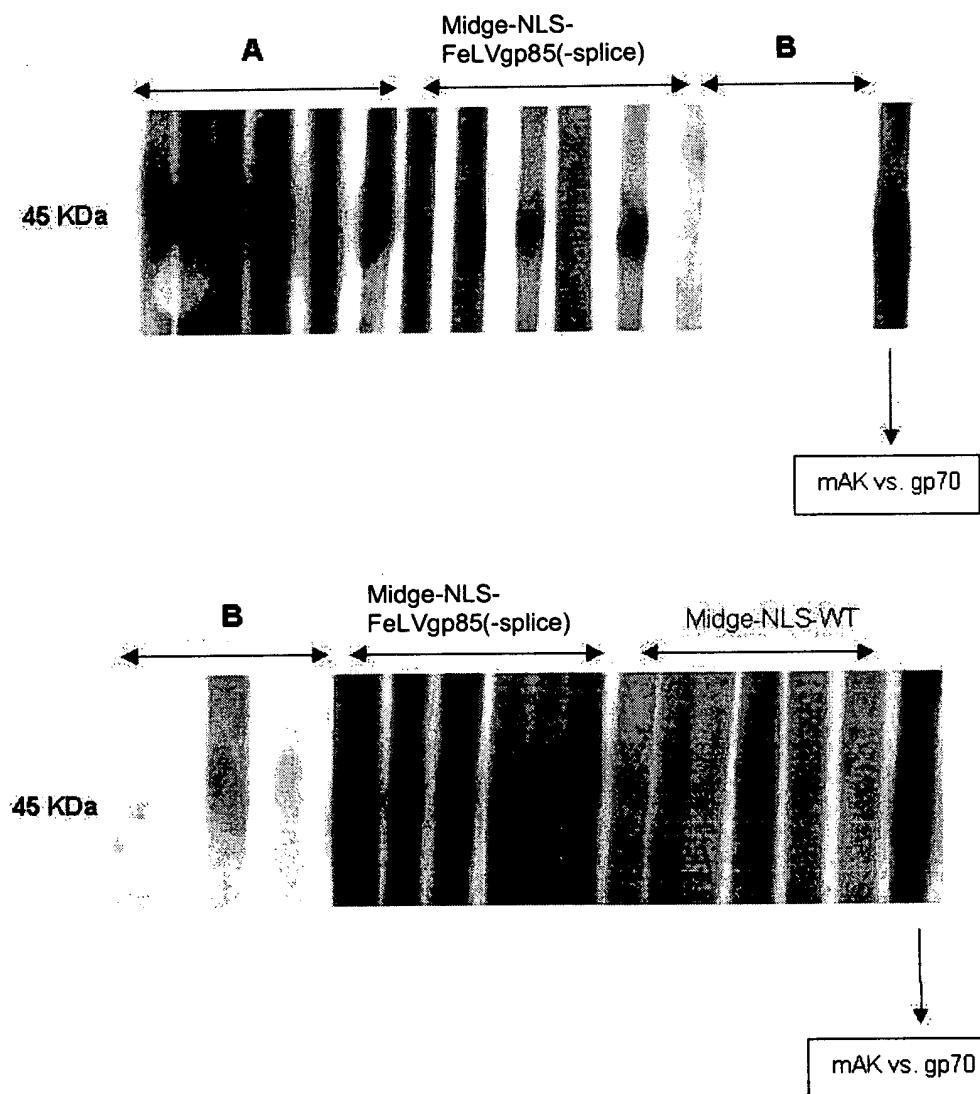


Fig. 4: DNA sequence comparison of the wild type “gag” gene (Seq.ID2) against the codon-optimized “gag” gene (Seq.ID5).

| | | |
|--------|------|---|
| SeqID2 | 1 | ATGGGCCAAACTATAACTACCCCTTGAGCCTCACCTCAACCACTGGCTGAGGTTCA |
| SeqID5 | 1 | "'G'"C'"C"'"C"'"G'"G'"G'"AGC'"G'"G'" |
| SeqID2 | 61 | GCACGGGCCCGTAATCAGGGTGTGAGTCCGGAAAAAGAAATGGATTACACTGTGTGAA |
| SeqID5 | 61 | "'CA'"A"'"G'"C"'"C"'"G'"G'"GA'"G'"G'"G'"C'"C"'"C"'"G'"G'" |
| SeqID2 | 121 | GCCGAATGGGTAATGATGAATGTAGGTTGGCCCGAGAAGGAACCTTCACCATTGACAAT |
| SeqID5 | 121 | "'G'"G'"G'"C"'"C"'"A"'"G'"G'"C'"C"'"C"'"C"'"C"'"G'"G'" |
| SeqID2 | 181 | ATTTCACAGGTCGAGGAGAGAATCTCGCCCGGGCCATATGGACACCCAGATCAAATC |
| SeqID5 | 181 | "'CAGC'"G'"G'"C"'"C"'"C"'"C"'"C"'"C"'"G'"G'" |
| SeqID2 | 241 | CCTTATATTACACGTGGAGATCCCTAGCCACAGACCCCCCTCCATGGGTCGCCCATTC |
| SeqID5 | 241 | "'C'"C'"C"'"C"'"GAG'"G'"C"'"C"'"G'"G'"GA'"G'"C'" |
| SeqID2 | 301 | CTACCCCCCTCTAACGCATCCCAGGACAGATCCTCCGAGCCTCTTCGCCGCAACCTCTT |
| SeqID5 | 301 | "'G'"C'"C"'"C"'"C"'"C"'"C"'"C"'"GAGC'"C'"G'"C'"G'" |
| SeqID2 | 361 | GCGCCGCAACCC_TC_TTCCCCCCA_CCCCGTCTCTACCCCCGTTCTCCCAAACAGAC |
| SeqID5 | 361 | "'C'"C'"G'"AG"GCC'"T"AG"AG'"G'"G'"G'"G'"C'" |
| SeqID2 | 418 | CCCCCCAAGGCGCTGTATTACCAACCCAAATCCTTCTCCCTTTAATTGATCTTTAACAA |
| SeqID5 | 421 | "'C'"C'"GC"'"C"'"C"'"C"'"C"'"C"'"C"'"G'"G'"C'"G'"C'" |
| SeqID2 | 478 | GAAGAGCCACCTCCCTATCCTGGGGTCACGGCCAACACCGCCGTCAAGGCCCTAGAAC |
| SeqID5 | 481 | "'G'"C'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"G'"G'" |
| SeqID2 | 538 | CCAACTGCCCTCCCCGATTGCCATCCGGCTGCGAGAACGACGAGAAAATCCAGCTGAGAAA |
| SeqID5 | 541 | "'C'"C'"AG'"C'"C"'"G"'"A"'"A"'"G'"GA'"G'"G'"C'"C'"C'"G'" |
| SeqID2 | 598 | TCTCAAGCCCTCCCTTAAGGGAAGACCCAAACAACAGACCCCAGTACTGCCATTCTCG |
| SeqID5 | 601 | "'AGC'"G'"G'"C"'"G"'"G'"C"'"G'"G'"C"'"G'"G'"C"'"G'"AGC'" |
| SeqID2 | 658 | GCCTCTGACCTGTACAATTGGAAATTGCATAA_CCCCCCTTTCTCCAGGACCCAGTGGC |
| SeqID5 | 661 | "'AGC'"C"'"GC"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'" |
| SeqID2 | 717 | CCTAACTAACCTAATTGAGTCCATTAGTAGTGACACATCAGCCAACCTGGGACGACTGCCA |
| SeqID5 | 720 | "'G'"C"'"G'"AG'"CC"'"G'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'" |
| SeqID2 | 777 | ACAGCTTTACAGGCTCTCTGACGGCAGAGGAGAGACAAAGGGTCCTTGAAGGCCG |
| SeqID5 | 780 | "'GC"'"G'"C"'"G'"C"'"C"'"G'"G'"C"'"G'"G'"G'"G'"G'"A'" |
| SeqID2 | 837 | AAAGCAAGTTCCAGGCAGGGACGGACGGCAACCCAGCTGCCAATGTCGTTGACGAGGC |
| SeqID5 | 840 | "'G'"G'"C"'"C"'"CA"'"C"'"C"'"C"'"C"'"C"'"C"'"G'"G'"G'" |
| SeqID2 | 897 | TTTCCCCCTGACCCGTCCCAACTGGATTGTACGCCGGCAGGTAGGGAGCACCTACG |
| SeqID5 | 900 | "'C"'"C"'"A"'"G"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"GA" |
| SeqID2 | 957 | CCTTATGCCAGTTGCTGTTAGCGGGCTCCGCGGGCTGCAAGACGCCCACTAATT |
| SeqID5 | 960 | "'G'"CA"'"C"'"C"'"C"'"G'"G'"GA'"G'"C"'"C"'"GA"'"G"'"C"'"CC" |
| SeqID2 | 1017 | GGCACAGGTAAGCAAGTTGACAAGGAAAGAGGAAACGCCAGCTCATTCTAGAAAG |
| SeqID5 | 1020 | "'C"'"G"'"G"'"G"'"G"'"C"'"G"'"G"'"G"'"A"'"C"'"AGC"'"C"'"G"'"G"'" |
| SeqID2 | 1077 | ATTAAGGAGGCTTACAGAATGTATACTCCCTATGCCCTGAGGACCCAGGGCAGGCTG |
| SeqID5 | 1080 | "'GC"'"G"'"C"'"G"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"C"'"CA" |
| SeqID2 | 1137 | TAGTGTATCCTGTCCTTATCTACCGTAGCCGGACATAAGAAATAAGTTACAAAG |
| SeqID5 | 1140 | "'C"'"G"'"AG"'"C"'"C"'"AGC"'"C"'"C"'"C"'"C"'"G"'"C"'"C"'"G"'"G"'" |

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| | | |
|--------|------|---|
| SeqID2 | 1197 | GCTAGAAGGCCTACAGGGGTTCACACTGTCTGATTGCTAAAAGAGGCAGAAAAGATATA |
| SeqID5 | 1200 | ""G""G""G""G""C""C""AGC""CC""G""G""G""C""G""G""C"" |
| SeqID2 | 1257 | CAACAAAAGGGAAACCCCAGAGGAAAGGGAGAAAAGATTATGGCAGCGGCAGGAAGAAAAG |
| SeqID5 | 1260 | """"G""""G""A""C""G""G""G""G""GC""G""A""""""G""G"" |
| SeqID2 | 1317 | AGATAAAAAGCGCCATAAGGAGATGACTAAAGTTCTGGCCACAGTAGTTGCTCAGAAATAG |
| SeqID5 | 1320 | G""C""G""A""G""C""G""C""G""C""G""G""G""C""G""C""G""C"" |
| SeqID2 | 1377 | AGATAAGGATAGAGGGAAAGTAAACTGGGAGATCAAAGGAAAATACCTCTGGGGAAAGA |
| SeqID5 | 1380 | G""C""""C""G""C""G""G""C""G""C""G""G""C""G""C""C""G"" |
| SeqID2 | 1437 | CCAGTGTGCCTATTGCAAGGAAAAGGGACATTGGGTTCGCGATTGCCGAAACGACCCCG |
| SeqID5 | 1440 | """"C""""C""""G""""C""G""GA""G""C""""C""GA""G""A"" |
| SeqID2 | 1497 | GAAGAAACCCGCCAACCTCCACTCTCCTCTAA |
| SeqID5 | 1500 | """"G""""""AG""C""G""G""G |

Fig. 5 DNA sequence comparison of the wild type „env“ (gp70 region from Seq.ID1) against the codon- and signal optimized „env“ gene (gp70; Seq.ID8).

| | | |
|---------|------|--|
| SeqID11 | 1 | ATGGAAAGTCCAACGCACCCAAAACCCCTCTAAAGATAAGACTCTCTCGTGGAACTTAGCG |
| SeqID8 | 1 | """GTCC""C""C""G""C""G""C""G""C""G""A""G""T" |
| SeqID11 | 61 | TTTCTGGTGGGGATCTTATTTACAATAGACATAGGAATGGCCAATCCTAGTCCACACCAA |
| SeqID8 | 61 | "C""C""G""C""G""C""T""T""C""G""C""CTCC""C""C""GG |
| SeqID11 | 121 | ATATATAATGTAACCTGGGTAATAACCAATGTACAAACTAACACCCAAGCTAACGCCACC |
| SeqID8 | 121 | "C""C""G""C""G""C""G""C""G""C""G""C""T""T""T" |
| SeqID11 | 181 | TCTATGTTAGGAACCTTAACCGATGCCTACCCCTACCCATGTTGACTTATGTGACCTA |
| SeqID8 | 181 | "C""G""C""C""G""A""A""C""G""G""C""G""G""C""G""G |
| SeqID11 | 241 | GTGGGAGACACCTGGGAACCTATAGCTCTAAACCAACCAATGTAACACACGGGGCACGT |
| SeqID8 | 241 | "G""G""C""TCCG""G""C""G""C""G""G""T""CA""G |
| SeqID11 | 301 | TACTCCTCCTCAAATATGGATGTAACAGATAGAAAAAACAGCAACAGACATAC |
| SeqID8 | 301 | "C""G""C""C""G""C""G""C""G""G""G""C""G""C""G |
| SeqID11 | 361 | CCCTTTTACGTCTGCCCGGACATGCCCTCGTGGGCCAAAGGGAACACATTGTGGA |
| SeqID8 | 361 | "C""T""G""T""C""CC""C""C""C""C""C""G |
| SeqID11 | 421 | GGGGCACAAGATGGTTTGTGCCGCATGGGATGTGAGACCACCGGAGAACGCTTGGTGG |
| SeqID8 | 421 | "C""G""C""C""T""C""C""A""A""G""G""C""G""C""G |
| SeqID11 | 481 | AAGCCCACCTCCTCATGGACTATATCACAGTAAAAGAGGGAGTAGTCAGGACAATAGC |
| SeqID8 | 481 | "C""G""G""C""G""C""G""G""G""C""G""CTCCTCC""C""CTC |
| SeqID11 | 541 | TGTGAGGGAAATGCAACCCCTGGTTTGCAAGTTCACCCAGAACGGGAAGACAAGCCTCT |
| SeqID8 | 541 | "C""G""C""G""G""C""G""C""G""C""G""C""G""C |
| SeqID11 | 601 | TGGGACGGACCTAACAGATGTGGGATTGCGACTATACCGTACAGGATATGACCCCTATCGCT |
| SeqID8 | 601 | "T""C""C""CC""A""G""G""A""G""G""C""T""C |
| SeqID11 | 661 | TTATTCACGGTGTCCCGGCAGGTATCAACCATTACGCCGCTCAGGCAATGGGACCAAC |
| SeqID8 | 661 | "C""G""A""A""G""G""C""C""C""C""C""C""C""C""C |
| SeqID11 | 721 | CTAGTCTTACCTGATCAAAACCCCCATCCGACAATCTCAAACAGGTCCAAAGTGGCG |
| SeqID8 | 721 | "G""GC""G""C""G""G""C""A""G""G""C""G""G""C""G""C |
| SeqID11 | 781 | ACCCAGAGGCCAACGAATGAAAGCGCCCAAGGTCTGTTGCCCAACCCACCATGGGT |
| SeqID8 | 781 | "G""C""G""GTCT""C""G""G""C""C""C""C""C |
| SeqID11 | 841 | CCCAAACGGATTGGGACCGGAGATAGGTTAAATAATTAGTACAAGGGACATACCTAGCC |
| SeqID8 | 841 | "GA""C""A""G""C""C""G""C""CC""G""G""C""G""C""G""G |
| SeqID11 | 901 | TTAAATGCCACCGACCCCAACAAAACACTAAAGACTGTTGGCTCTGCCCTGGTTCTCGACCA |
| SeqID8 | 901 | "C""G""A""G""G""C""G""C""G""C""G""G""G""CA""G""C |
| SeqID11 | 961 | CCCTATTACGAAGGGATTGCAATCTTAGGTAACACAGCAACAAACACACCCCCCCCAC |
| SeqID8 | 961 | "C""T""G""C""C""C""G""C""G""C""G""C""G""C""G""C |
| SeqID11 | 1021 | TCCTGCCTATCTACTCCGCAACACAAACTAAACTATATCTGAAGTATCAGGGCAAGGAATG |
| SeqID8 | 1021 | "G""C""C""C""G""G""G""C""G""C""G""G""T""C""G""C""C |
| SeqID11 | 1081 | TGCATAGGGACTGTTCTAAACCCACCAAGGCTTGTGCAATAAGACACAAACAGGGACAT |
| SeqID8 | 1081 | "T""C""A""G""C""G""G""G""C""C""C""G""C""G""C""C |
| SeqID11 | 1141 | ACAGGGCGCACTATCTAGCCGCCAACGGCACCTATTGGCCTGTAACACTGGACTC |
| SeqID8 | 1141 | "C""G""T""T""T""C""G""T""T""T""C""G""A""C""G |

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Fig. 6 DNA sequence comparison of the wild type „env“ gene (Seq.ID1) against the codon- and signal optimized „env“ gene (gp85) (Seq.ID7).

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Fig. 7 Protein sequence comparison of the wild type “gag” protein (Seq.ID4) against the protein sequence of the codon-optimized “gag” protein (Seq.ID6).

Fig. 8 Protein sequence comparison of the wild type „env“ protein (Seq.ID3) against the protein sequence of the codon- and signal optimized „env“ protein (gp70) (Seq.ID10).

| | | |
|---------|-----|---|
| SeqID3 | 1 | MESPTHPKPSKDKTLSWNLAFLVGILFTIDIGMANPSPHQIYNVTWVITNVQTNTQANAT |
| SeqID10 | 1 |MV.....PR..... |
| SeqID3 | 61 | SMLGTLTDAYPTLHVDLCDLVGDTWEPIVLNPTNVKHGARYSSSKYGCKTTDRKKQQQTY |
| SeqID10 | 61 |P..... |
| SeqID3 | 121 | PFYVCPGHAPS LGPKGTHCGGAQDGFCAAWG CETTGEA WWKPTSSWDYITVKRGSSQDNS |
| SeqID10 | 121 | |
| SeqID3 | 181 | CEGKCNPLVLQFTQKGRQASWDGP KMWGLRLYRTGYDPIALFTVSRQVSTITPPQAMGP N |
| SeqID10 | 181 | |
| SeqID3 | 241 | LVL PDQKPPSRQSQTGSKVATQR PQTNESAPRSVAPTTMGP KRG DRLINLVQGTYLA |
| SeqID10 | 241 | |
| SeqID3 | 301 | LNATDPNKT KDCWLCLVSRPPYYEGIAILGNYSNQTNPPSCLSTPQHKL TISEVSGQGM |
| SeqID10 | 301 | |
| SeqID3 | 361 | CIGTVPKTHQALCNKTQQGHTGAHYLAAPNGTYWACNTGLTPCISMAVLNWTSDFCV LIE |
| SeqID10 | 361 |V..... |
| SeqID3 | 421 | LWPRVTVYHQPEYVYTHFAKAVRFRREPISLTVALMLGGLTVG GIAGVGTGT KALLETA |
| SeqID10 | 421 | |

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Fig. 9 Protein sequence comparison of the wild type „env“ protein (Seq.ID3) against the protein sequence of the codon- and signal optimized „env“ protein (gp85) (Seq.ID9).

| | | |
|--------|-----|--|
| SeqID3 | 1 | MESPTHPKPSKDKTLSWNLAFLVGILFTIDIGMANPSPHQIYNVTWVITNVQNTQANAT |
| SeqID9 | 1 | "*****MV*****PR***** |
| SeqID3 | 61 | SMLGTLTDAVPTLHVDLCDLVGDTWEPIVLNPTNVKHGARYSSSKYGCKTTDRKKQQQTY |
| SeqID9 | 61 | "*****p***** |
| SeqID3 | 121 | PFYVCPGHAPS LGPKGTHCGGAQDGFCAAWGCE TTGEAWWKP TS SWDYITVKRGSSQDNS |
| SeqID9 | 121 | "***** |
| SeqID3 | 181 | CEGKCNPLVLQFTQKG RQASWDGPKMWGLRLYRTGYDPIALFTVSRQVSTITPPQAMGP N |
| SeqID9 | 181 | "***** |
| SeqID3 | 241 | LVL PDQKPPSRQSQTGSKVATQRPQTNESAPRSVAPTTMGPKRIGTGDRLLINLVQGTYLA |
| SeqID9 | 241 | "***** |
| SeqID3 | 301 | LNATDPNKT KDCWLCLVSRPPYYEGIAILGNYSNQTNPSSCLSTPQHKLTI SEVSGQGM |
| SeqID9 | 301 | "***** |
| SeqID3 | 361 | CIGTVPKTHQALCNKTQQGHTGAHYLAAPNGTYWACNTGLPCISMAVLNWTSDFCV LIE |
| SeqID9 | 361 | "*****V***** |
| SeqID3 | 421 | LWPRVTVHQPEYVYTHFAKAVRFRREPISLTVALMLGGLTVG GIAAGVGTGT KALLETAQ |
| SeqID9 | 421 | "***** |
| SeqID3 | 481 | FRQLQMAMHTDIQALEESISALEKSLTSLSVVLQNRRLGDLFLQEGGLCAALKEECCF |
| SeqID9 | 481 | "*****V***** |
| SeqID3 | 541 | YADHTGLVRDNMAKL RERLKQRQQLFDSQQGW FEGWFNKS PWFTTLISSIMGP L LILLI |
| SeqID9 | 541 | "*****L***** |
| SeqID3 | 601 | LLFGPCILNRLVQFVKDRISVVQALILTQQYQQIKQYDPDRP |
| SeqID9 | 601 | "*****V***** |